GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

INDIA WEATHER REVIEW

ANNUAL SUMMARY FOR 1928

PART B

SNOWFALL

CONTENTS

Published by Authority of the Government of India

UNDER THE DIRECTION OF

C. W. B. NORMAND, M.A., D.Sc.,

Director General of Observatories

National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages
Faded or light ink
Binding intrudes into the text

This document has been imaged through the NOAA Environmental Data Rescue Program. To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or www.reference@nodc.noaa.gov.

Information Manufacturing Corporation
Imaging Subcontractor
Rocket Center, West Virginia
September 14, 1999

Government of India Publications are obtainable from the Government of India Central Publication Branch, 3, Government Place, West Calcutta, and from the following Agents :—

EUROPE.

OFFICE OF THE HIGH COMMISSIONER FOR INDIA,
42, GROSVENOR GARDENS, LONDON, S. W. 1.

And at all Booksellers.

INDIA AND CEYLON :

Provincial Book Depots.

MADRAS :—Superintendent, Government Press, Mount Road, Madras.
BOMBAY :—Superintendent, Government Book Depot, Town Hall, Bombay.
SIND :—Library attached to the Office of the Commissioner in Sind, Karachi.
BENGAL :—Bengal Secretariat Book Depot, Writers' Buildings, Room No. 1, Ground Floor, Calcutta.
UNITED PROVINCES OF AGRA AND OUDH :—Superintendent of Government Press, United Provinces of Agra and Oudh, Allahabad.
PUNJAB :—Superintendent, Government Printing, Punjab, Lahore.
BURMA :—Superintendent, Government Printing, Burma, Rangoon.
CENTRAL PROVINCES AND BERAR :—Superintendent, Government Printing, Central Provinces, Nagpur.
ASSAM :—Superintendent, Assam Secretariat Press, Shillong.
BIHAR AND ORISSA :—Superintendent, Government Printing, Bihar and Orissa, P. O. Gulzarbagh, Patna.
COORG :—Office of the Chief Commissioner of Coorg, Bangalore.
NORTH-WEST FRONTIER PROVINCE :—Manager, Government Printing and Stationery, Peshawar.

Thacker, Spink & Co., Calcutta and Simla.
W. Newman & Co., Ltd., Calcutta.
R. Cambray & Co., Calcutta.
S. K. Lahiri & Co., Calcutta.
The Indian School Supply Depot, 309, Bow Bazar Street, Calcutta.
Butterworth & Co. (India), Ltd., Calcutta.
Rai M. C. Sarcar Bahadur & Sons, 90-2A, Harrison Road, Calcutta.
Standard Literature Company, Limited, Calcutta.
Association Press, Calcutta.
Chukervertty, Chatterjee & Co., Ltd., 13, College Square, Calcutta.
The Book Company, Calcutta.
James Murray & Co., 12, Government Place, Calcutta. (For Meteorological Publications only.)
Ray Choudhury & Co., 68-5, Asutosh Mukherji Road, Calcutta.
Scientific Publishing Co., 9, Taltolla Lane, Calcutta.
Chatterjee & Co., 204, Cornwallis Street, Calcutta.
Standard Law Book Society, 8-2, Hastings Street, Calcutta.
The Hindu Library, 3, Nandalal Mullick Lane, Calcutta.
B. C. Basak, Esq., Proprietor, Albert Library, Dacca.
Mitra Brothers, Rajshahi.
Higginbothams, Madras.
Rochouse and Sons, Madras.
G. A. Nateson & Co., Publishers, George Town, Madras.
Theosophical Publishing House, Adyar, Madras.
P. Varadachary & Co., Madras.
S. Murthy & Co., Madras.
Bright & Co., Trivandrum.
The Booklover's Resort, Taikad, Trivandrum, South India.
E. M. Gopalakrishna Kone, Pudumandapam, Madura.
Central Book Depot, Madura.
Vijapur & Co., Vizagapatam.
Thacker & Co., Ltd., Bombay.
D. B. Taraporevala Sons & Co., Bombay.
Sunder Pandurang, Bombay.
Ram Chandra Govind & Sons, Kalbadevi Road, Bombay.
N. M. Tripathi & Co., Booksellers, Princess Street, Kalbadevi Road, Bombay.
New and Secondhand Bookshop, Kalbadevi Road, Bombay.
Mrs. Radhabai Atmaram Sagoon, Kalbadevi Road, Bombay.
J. M. Pandia & Co., Bombay.
Gatulal & Co., Bombay.
A. H. Wheeler & Co., Allahabad, Calcutta and Bombay.
S. Govind & Co., Sandhurst Road, Girgaum, Bombay.
Proprietor, New Kitabkhana, Poona.
The Manager, Oriental Book Supplying Agency, 15, Shukrawar, Poona City.
Rama Krishna Bros., Opposite Visrambag, Poona City.
S. P. Bookstall, 21, Budhwar, Poona.
Mangaldas & Son, Booksellers and Publishers, Bhaga Talao, Surat.
The Standard Book and Stationery Co., 32-33, Arbab Road, Peshawar.
R. B. Umadikar & Co., The Bharat Book Depot, Dharwar.
The Standard Bookstall, Karachi, Quetta, Delhi, Murree and Rawalpindi.
The Karachi Book Depot, Elphinstone Street, Camp, Karachi.
The English Bookstall, Karachi.
The Standard Bookstall, Quetta.
U. P. Malhotra & Co., Quetta.
J. Ray & Sons, 43, K. & L., Edwardes Road, Rawalpindi, Murree and Lahore.
The Standard Book Depot, Lahore, Nainital, Mussoorie, Dalhousie, Ambala Cantonment and Delhi.
N. B. Mathur, Supdt., Nazir Kanun Hind Press, Allahabad.
The North India Christian Tract and Book Society, 18, Clive Road, Allahabad.
Ram Dayal Agarwala, 184, Katra, Allahabad.
The Indian Army Book Depot, Juhi, Cawnpore.
The Indian Army Book Depot, Jullundur City.
Manager, Newal Kishore Press, Lucknow.
The Upper India Publishing House, Ltd., Literature Palace, Ammuddaula Park, Lucknow.
Rai Sahib M. Gulab Singh & Sons, Mufid-i-Am Press, Lahore and Allahabad.
Rama Krishna & Sons, Booksellers, Anarkali, Lahore.
Puri Brothers, Booksellers and Publishers, Katcheri Road, Lahore.
The Tilak School Bookshop, Lahore.
The Standard Bookstall, Lahore.
The Proprietor, Punjab Sanskrit Book Depot, Saidmitha Street, Lahore.
The Insurance Publicity Co., Ltd., Lahore.
The Punjab Religious Book Society, Lahore.
Manager of the Imperial Book Depot, 63, Chandney Chawk Street, Delhi.
Fono Book Agency, New Delhi.
Oxford Book and Stationery Company, Delhi and Calcutta.
Supdt., American Baptist Mission Press, Rangoon.
The Modern Publishing House, Ltd., 30, Phayre Street, Rangoon.
Burma Book Club, Ltd., Rangoon.
Manager, the "Hitavada," Nagpur.
Bhisey Brothers, Booksellers and Stationers, Sitabaldi, Nagpur.
S. C. Talukdar, Proprietor, Students & Co., Cooch Behar.
The Manager, Ceylon Observer, Colombo.
The Manager, The Indian Book Shop, Benares City.
Nandkishore & Bros., Chowk, Benares City.
The Srivilliputtur Co-operative Trading Union, Ltd., Srivilliputtur (S. I. R.).
Raghunath Prasad & Sons, Patna City.
The Students' Emporium, Patna.
K. L. Mathur & Bros., Guzri, Patna City.
Dandekar Brothers, Indore City.
Pushtakalaya Sahayak Sahakari, Ltd., Baroda.
The Hyderabad Book Depot, Chaderghat, Hyderabad (Deccan).
Thakur & Co., Amraoti.
S. Krishnaswami & Co., Teppakulam P. O., Trichinopoly Fort.
National College Teachers' Union Book Depot, Trichinopoly.

ANNUAL SUMMARY, 1928.

PART B.*

SNOWFALL.

The cold weather period, January and February.

I.—Persia.

Meshed.—There were seven falls of snow in January and four in February. The fall on the 10th February was exceptionally heavy, the depth being 1½ ft. The total precipitation including rainfall amounted to 13·3 in. and 27·0 in. respectively in the two months.

The snowfall of the season was much above the average of previous years.

II.—Afghanistan.

Kabul.—There were eight falls of snow during each of the months January and February, the heaviest fall amounting to more than a foot. The total precipitation during each of the months was about 3 ft.

III.—Baluchistan.

Quetta.—The total precipitation, rain and snow was 1·46 in. in January and 2·24 in. in February, the snowfall amounting to about ¾ in. and 3¼ in. in the two months respectively.

IV.—North-West Frontier Province.

(*a*) *Hazara.*—The following table shows the character of the snowfall in the two months :—

Table.

Locality.	No. of days of snowfall.	Total amount.		Accumulation at the end of the month.	
	January.				
		Ft.	In.	Ft.	In.
Inner Hills :—					
Narang	7	15	6	2	2
Paludran	7	11	10	1	8
Kagan	7	7	4	1	1
Jared	4	1	10	0	5
Malkandi	5	1	8	0	4
Sundigali	14	11	5	5	9
Jacha	15	9	0	4	6
Outer Hills :—					
Thandiani	16	4	6	4	6
Dungagali	11	12	3	7	0
Birangali	8	2	6	1	6
	February.				
Inner Hills :—					
Narang	5	18	10	0	0
Paludran	5	16	6	0	0
Kagan	5	10	9	0	0
Jared	5	2	3	0	0
Malkandi	0	0	0	0	0
Sundigali	10	9	4	0	0
Jacha	10	6	7	0	0
Outer Hills :—					
Thandiani	6	2	4	3	9
Dungagali	3	5	6	3	6
Birangali	11	2	1	0	0

The accumulation of snow at the end of the period was below the average.

(*b*) *Khyber Agency.*—The snowfall on the Tartara hills amounted to 8 in. in January, and about 2 in. in February.

(*c*) *Kohat.*—No snow fell during January and February at Hangu, the precipitation being in the form of rain. On the Samana range, however, a fall of about 2½ ft. occurred during January, the fall in February being limited to 8 in.

(*d*) *North Waziristan.*—Little snow fell in January, but a heavy fall of about 2 ft. occurred in the 2nd week of February followed by several light falls during the same month.

(*e*) *Dera Ismail Khan.*—Snowfall during the winter was above normal on the Takht-i-Suleman.

V.—Kashmir.

(*a*) *Skardu.*—Light snow fell on 12 days in each of the months of January and February, the total amounts being 0·70 in. and 2·48 in. respectively.

(*b*) *Dras.*—Frequent snowfalls occurred during the month of January, the total amount when measured as rain being 3·67 in. Snowfalls were more frequent and heavier in February, the total precipitation when melted into water amounting to 11·44 in.; of this 10·99 in. fell during the first half of the month. The amount of snow accumulation at the end of February was normal being about 6 ft. at the station.

* This Part is based on the reports received mostly from the local Government Officers, who in turn, collect the required information from the people.

(c) *Srinagar.*—There were several falls of snow in January, the heaviest being 0·70 in. on the 28th. The total precipitation was 1·84 in. which was below normal. Occasional heavy falls occurred during the first fortnight in February, the heaviest measuring 0·91 in. on the 2nd. The total fall, when melted into water was 5·71 in. which was above normal.

(d) *Kargil.*—Snow fell on 12 days in January and on 10 days in February, the monthly totals measured as rain being 1·06 in. and 3·16 in. respectively. The accumulation on the peaks at the end of January was about 3 ft. and in February it was about 6 ft., the total snowfall in both the months was above the average of previous years.

VI.—Punjab.

(a) *Rawalpindi.*—Snowfall extended over one-third of the Murree area and a small area of the Kahuta Tahsil. It fell 6 times in January the total being 4 ft. 2½ in. The heaviest fall occurred on the 25th being about 1 ft. 10 in. In February there were 7 snowfalls and the total for the month was 1 ft. 10 in. the heaviest fall being only 7 in. The total falls during the two months were below the average.

(b) *Kulu (Kangra District).*—Snowfall occurred throughout the Valley in January and February, the amounts being normal in the former and above normal in the latter month.

(c) *Simla.*—Snow fell on 8 days in January and 11 days in February and descended to a height of 5,000 feet. The falls in February were heavy and caused considerable damage to the existing roads and buildings. The fall was above normal in January and considerably so in February. The accumulations on the various peaks and passes were as follows :—

Table.

Pass or peak.	At the end of January.	At the end of February.
	Ft.	Ft.
Kailash	8	18
Rupan	6½	12
Brua	5¼	11
Shatul	5	10

The accumulation at the end of the period was normal.

VII.—United Provinces.

(a) *Almora.*—The following table gives the monthly totals of snowfall :—

Table.

Locality.	January.	February.
	Ft.	Ft.
Biyans	10½	15½
Malla Danpur	2	9
Chaudans	13½	15½
Malla Johar	33	..
Malla Darma	..	16

Approximate accumulations of snow on the well-known peaks and passes were as follows :—

Table.

Pass or peak.	At the end of January.	At the end of February.
	Ft.	Ft.
Lampia	24	20
Lipulekh	19	15½
Pindari	4	9
Kafini	4	9
Kantila	4	9
Puwalidwar	4	9
Binkaru	18	11½
Nuwe	43	49

Snowfall on the whole, was normal in January and above normal in February.

(b) *Garhwal.*—In January snow fell on 9 days and in February on 3 days in the various pattis in the north of the district, the average fall being about 3½ ft.

VIII.—Assam.

(*a*) *Kamrup.*—The following table gives the snowfall amounts in the district :—

Table.

Locality.	January.		February.	
	Ft.	In.	Ft.	In.
Dewangiri	0	4	0	3
Gampa	0	4	0	3
Chirkimila	0	7	0	6
Angal	0	7	0	6
Chungkhar	0	7½	0	6½
Kepegangai	1	6½	1	3½
Pangkhar	1	1½	0	11½
Tasigaon	1	7	1	3
Tupkang	1	7½	1	3½
Oangsengla	1	8½	1	5½
Fongmi	1	2	1	0
Chakteng	1	2	1	0
Makaktu	1	2	1	0
Tawanga	2	7	2	2
Wang Angla	2	7	2	2
Karila	2	7	2	2
Choina	2	7	2	2
Chengla	2	7	2	2

The snowfall in the district was normal.

(*b*) *Sadiya Frontier Tract.*—No large fall of snow was observed in January. The total snowfall was probably below normal.

The hot weather period, March to May.

I.—Persia.

Meshed.—There were 5 snowfalls in March. Information is not available for April and May.

II.—Afghanistan.

Kabul.—Slight snow fell on the 5th and about 2½ in. on the 8th March. There was no snowfall after that date.

III.—Baluchistan.

Quetta.—There was no snowfall during the period.

IV.—North-West Frontier Province.

(*a*) *Hazara.*—The following table gives the character of snowfall for the month of March :—

Table.

Locality.	No. of days of snowfall.	Total amount.		Accumulation at the end of the month.	
		Ft.	In.	Ft.	In.
Inner hills :—					
Narang	10	17	11	1	9
Paludran	10	10	10	1	1
Kagan	10	7	5	0	9
Jared	1	0	4	0	4
Malkandi	1	0	2	0	2
Sundigali	8	4	0	1	0
Jacha	8	3	6	..	
Outer hills :—					
Thandiani	4	0	5	2	0
Dungagali	4	2	4	0	4
Birangali	9	0	11	..	

Snowfall descended down to an elevation of 5,000 feet in the inner hills. The snowfall was about the average.

Snowfall on the hills round Abbottabad from November to May was about 3 to 10 ft. at altitudes of 6,000 to 18,000 feet. The accumulation of snow at the end of May varied from 2 to 8 ft. at altitudes 8,000 to 18,000 feet. The total amount of fall from November to May was normal.

(*b*) *Dir, Swat and Chitral.*—There was no fresh snowfall except some on Lowarai and its neighbourhood during May. The accumulation of snow at the end of May was 2½ ft. on Lowarai and its neighbouring hills, 7 ft. on the peaks of Choudgram Daral and Mankial and 6 ft. on Kanra. The accumulations of snow on the peaks were much greater than in the previous few years.

(*c*) *Khyber Agency.*—Slight snow fell in March in the Tartara hills. There was no snowfall during the rest of the period.

(*d*) *Kurram.*—There was no fresh snowfall in Parachinar during May. The accumulation of snow at the end of May was much above the average.

(*e*) *Kohat.*—There was no snowfall at Hangu, precipitation amounting to 4¼ in. being in the form of rain. On the Samana range, however, there was 4 in. of snow in March with 2·72 in. of rainfall.

(*f*) *Waziristan.*—Slight snow fell in March during the first fortnight. During the rest of the period there was no snowfall. In the Shiudar peak and pass snow was seen till the end of May.

V.—Kashmir.

(*a*) *Skardu.*—Snow combined with rain fell on 10 days during March on the surrounding mountains and at the station. In April fresh snow and rain occurred on 8 days

on the surrounding mountains and rain for 3 days at the station. In May, weather was mostly clear and slight snowfalls were observed on the surrounding high mountains. The snow accumulation at the end of the season on well-known passes and peaks was about 4 ft. being above normal.

(*b*) *Dras.*—Frequent and heavy snowfalls occurred in March and April and the respective amounts measured as rain were 5·73 in. and 7·45 in. No snowfall occurred during the month of May in Dras proper but snow continued to fall on the surrounding mountains. The total precipitation during the month was on the whole above normal, as also the snow accumulation at the end of the season.

(*c*) *Srinagar.*—Fresh snowfalls were observed on the surrounding high mountains throughout March and April. The fall in March was about normal while in April it was above it. Fresh snowfall occurred on the surrounding high mountains on the 12th May. The total accumulation of snow at the end of the season was said to be unusually great.

(*d*) *Kargil.*—Snowfall occurred on 13 days during March the total amount being 3·56 in. measured as rain. Snow with rain fell on 6 days in April, the total amount being 4·92 in. The total precipitation during March and April was above normal. No snow fell in May. The amount of snow accumulation at the end of the period on the well-known passes and peaks was about 2½ feet.

(*e*) *Gurez.*—Weather was rainy in May without any snowfall.

VI.—Punjab.

(*a*) *Rawalpindi.*—Light snowfall occurred in March in the Murree hills. The snowfall and snowline descended to a height of 2,300 ft.

(*b*) *Chamba.*—The snow accumulation at the end of May on the well-known passes and peaks was 10 to 14 ft. and greater than last year.

(*c*) *Kulu* (*Kangra District*).—There was some snowfall in March, but none in April and May except on very high peaks. Snowline descended to a height of 6,000 feet in March. The total accumulation at the end of the season was slightly below normal.

The accumulations of snow were as follows :—

Table.

Locality.	At the end of May.
	Ft.
Hamta	7
Chandarkhani	1
Pujadhar	1
Barsai	1
Lohri Achhri	2
Sirikhand	5

(*d*) *Simla.*—In March slight snow fell on the 28th and 29th, the total amount being 4 in. and snowline descended to about 7,000 feet. In April there were 5 falls of snow mingled with rain, the total amount being 2¾ in. and snowline descended to 7,500 feet. The month of May was fair and snow fell only on the 9th to a depth of ½ in. at a height of 9,000 feet. The total snowfall during the season was above the average of previous years.

The accumulations at the end of each month on the well-known passes are given in the following table :—

Pass or peak.	March.	April.	May.
	Ft.	Ft.	Ft.
Kailash	18	12	8
Rupan	12	7	4
Brua	11	6½	3
Shatul	11	6	2½

VII.—United Provinces.

(*a*) *Almora.*—The fresh deposits of snow in the several pattis were as follows :—

Table.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Biyans	7	3½	3
Malla Danpur	4	3	1
Malla Darma	2	2½	2½
Malla Johar	..	..	2¾

The approximate accumulations of snow on the various peaks and passes are given below :—

Table.

Peak or pass.	Accumulations at the end of		
	March.	April.	May.
	Ft.	Ft.	Ft.
Lampia	8½	10½	8
Lipulekh	6	10	5½
Pindari	4	3	1
Kafini	4	3	1
Kantila	4	3	1
Puwalidwar	4	3	1
Nuwe	40	42½	35
Ralam Dhura	..	..	¾
Unta Dhura	..	..	1
Bagdwar	..	..	½
Milam Dhura	..	..	1
Nandakot	..	..	1

The accumulation at the end of the season was below the average.

(*b*) *Garhwal.*—Weather during May was generally hot but accumulation of snow was more than usual.

VIII.—ASSAM.

Sadiya Frontier Tract.—In March Sejuba (Sadiya peak) had snow down to 10,000 feet. The snowfall was below normal.

The south-west monsoon period, June to September.

JUNE AND JULY.

I.—AFGHANISTAN.

Kabul.—On the Hindu Kush the snowfall of the period did not differ much from the normal. The accumulations of snow on the neighbouring mountains were also about the average, the snowline being at the usual level.

II.—NORTH-WEST FRONTIER PROVINCE.

(*a*) *Hazara.*—In the Kagan valley snowfall measuring 1 in. to 2 in. occurred at a height of 13,000 to 17,000 feet on 6 days during June and 7 days during July. There was some accumulation of snow on higher mountains at the end of the season.

(*b*) *Dir, Swat and Chitral.*—There was no snowfall in June and July except for some light falls in Swat Kohistan. The accumulations of snow at the end of July were between 10 ft. and 20 ft. on the Lowarai hills where they descended to lower levels. In Swat Kohistan and elsewhere the accumulation was below normal at heights up to 14,000 feet and normal on higher hills.

(*c*) *Khyber Agency.*—There was no snowfall during the season on the Tirah mountains nor was there any accumulation of snow at the end of the period except on the high peaks of Sofed Koh.

(*d*) *Kurram.*—The only snowfall during the period occurred on the 18th July and was confined to the Sikaran peak (15,000 feet), the snowline descending to 12,000 feet. The thickness of snow above 11,000 feet was somewhat above the average.

(*e*) *South Waziristan.*—No fresh snow fell during June and July. Some accumulation of snow existed on the Pirghal at the end of July.

III.—KASHMIR.

(*a*) *Skardu.*—No snow fell in June. In July snowfall occurred on the high surrounding mountains on 6 days. The accumulation of snow was normal at the end of July.

(*b*) *Dras.*—No snowfall occurred during June and July. Some accumulations of snow were visible on all the surrounding high peaks and passes at the end of July and were said to be somewhat above the average.

(*c*) *Srinagar.*—Fresh snowfall occurred on the western high mountains on the 11th and 25th June, while there was no snow in July.

(*d*) *Gulmarg.*—On the ranges of Affarwat fresh snowfall was observed on 5 days in June and 3 days in July. There was very little accumulation of snow at the end of the period.

(*e*) *Kargil.*—No snow fell during the season. The accumulation of snow at the end of July was 1 ft.

(*f*) *Sonamarg.*—Light falls of snow occurred occasionally on high peaks in both the months. The accumulation at the end of July was unusually greater on the adjacent mountains, being very dense in passes of Zojilla and Hungsthu.

(*g*) *Leh.*—There was no fresh snowfall during the season. All passes were open to traffic by the end of July.

IV.—PUNJAB.

(*a*) *Chamba.*—A light fall of snow occurred in the beginning of June but was confined to levels above 12,000 feet. Under the influence of hot weather the accumulation of snow had rapidly melted away.

(*b*) *Kulu* (*Kangra District*).—A light fall of snow occurred in June. In July snow fell on 5 days on altitudes of 15,000 feet and measured from 1 in. to 10 in. The accumulations of snow at heights of about 15,000 feet were 3 ft. deep at the end of July.

(*c*) *Kilba* (*Simla District*).—Snowfall occurred on 3 days in June and on 4 days in July. The accumulations of snow at the end of each month are set out in the following table:—

TABLE.

Pass or peak.	June.	July.
	Ft.	Ft.
Rupan	3	2½
Brua	2	2
Shatul	1½	1½
Kailash	6	5

On the whole the accumulations of snow at the end of July were above the average.

V.—UNITED PROVINCES.

(*a*) *Almora.*—Fresh falls of snow during each of the months June and July are given below :—

TABLE.

Locality.	June.	July.
	Ft.	Ft.
Malla Darma	4	5½
Malla Danpur	7	½
Biyans	4	3½
Chaudans	..	5½

The accumulations of snow at the end of each month are given in the following table :—

TABLE.

Pass or peak.	June.	July.
	Ft.	Ft.
Kafini	7	¾
Pindari	7	¾
Nandakot	7	¾
Kantila	7	¾
Puwalidwar	7	¾
Lampia	6	5
Lipulekh	6	3
Nuwe	24	..
Binkaru	..	5

The accumulations of snow at the end of July were above the average in patti Biyans, and below it in pattis Chaudans, Malla Darma and Malla Danpur.

(*b*) *Garhwal.*—The snowfall of the season was less than usual. The accumulation of snow at the end of July was 3 ft. on passes 15,000 feet high.

AUGUST AND SEPTEMBER.

I.—NORTH-WEST FRONTIER PROVINCE.

(*a*) *Drosh.*—Snowfall measuring 3 in to 1½ ft. occurred on the 27th September at heights of 12,000 feet and above.

II.—KASHMIR.

(*a*) *Skardu.*—Fresh snowfall was observed on the surrounding mountains on 10 days in August and 5 days in September, the total for the season being above the average.

(*b*) *Dras.*—On the surrounding mountains snowfall occurred on the 31st August and also on three days in September. Slight accumulation of snow was visible on some peaks at the end of September.

(*c*) *Srinagar.*—In the last week of August and the beginning of September some fresh falls of snow occurred on the high surrounding mountains. The total precipitation during each month was above the average.

(*d*) *Gulmarg.*—Several falls of snow occurred on the Affarwat range during August and September, the heaviest of them being recorded on 21st August and 25th September. The total precipitation was below normal in August and above it in September.

(*e*) *Kargil.*—No snow fell during August and September. The accumulations of snow at the end of September were 4 inches.

III.—PUNJAB.

Kilba (*Simla District*).—The snowfall during the season occurred only on the 24th September. The snowline descended down to a level of 12,000 feet. The accumulation of snow at the end of each month was below the average and is given in the following table :—

TABLE.

Pass or peak.	August.	September.
	Ft.	Ft.
Rupan	2	2½
Brua	1	1½
Shatul	1	1½
Kailash	4	5

IV.—UNITED PROVINCES.

Almora.—The snowfall in each of the months August and September was as follows :—

TABLE.

Locality.	August.	September.
		Ft.
Malla Danpur	½ in.	1
Biyans	3½ ft.	6½
Malla Darma	3½ „	5½

In August the snowfall was below the average in pattis Malla Darma and Malla Danpur and above the average in patti Biyans. In September the snowfall was below normal in patti Malla Danpur and above it in pattis Malla Darma and Biyans.

The accumulations of snow at the end of each month are given in the following table :—

TABLE.

Pass or peak.	August.	September.
	Ft.	Ft.
Kafini	2—3	1
Pindari	2—3	1
Nandakot	2—3	1
Puwalidwar	2—3	1
Lampia	6	8
Lipulekh	3½	5½
Nuwe	15	14½

The accumulation was below the average at the end of September.

The retreating monsoon period, October to December.

I.—Afghanistan.

Kabul.—Snowfall on the surrounding hills commenced on the 10th November and occurred on 4 days during that month and on 3 days up to 15th December. No report is available after the 15th December.

II.—Baluchistan.

Quetta.—Towards the end of November some snow was noticeable on the peaks of the ranges round Quetta chiefly above 8,000—9,000 feet. In December snow fell on 5 days, descending sometimes to the station level. The average depth of snow was, however, not much. The total snowfall was greater than that registered during the last few years.

III.—North-West Frontier Province.

(*a*) *Hazara.*—Snow fell in December. The table below gives the character of snowfall during this month :—

Table.

Locality.	Number of days of snowfall.	Total amount.		Accumulation at the end of month.	
		Ft.	In.	Ft.	In.
Inner hills—					
Narsng	9	14	9	4	11
Paludran . . .	9	12	7	4	8
Kagan	9	10	6	2	11
Jared	4	1	11	1	0
Malkandi . . .	3	1	4	0	3
Sundigali . . .	6	5	3	3	0
Jacha	7	4	3	2	5
Outer hills—					
Thandiani . . .	6	5	7	4	11
Dungagali . . .	7	7	2	6	6
Birangali . . .	8	4	8	3	6

The accumulation of snow at the end of December was above the average.

(*b*) *Drosh.*—Snowfall occurred on one day in October, on 4 days in November and on 2 days in December ; no report is available after the 23rd December. The total snowfall was below the average. The accumulation of snow at the end of December was 6 ft. on the Lohari Pass and was below normal.

(*c*) *Kurram.*—Snowfall up to the 28th November was light and melted rapidly. On the 28th November and again on the 3rd and 13th December, however, snow fell heavily descending down to the level of 4,500 feet. The falls were the heaviest recorded at this time during the last four years.

The accumulation of snow in the middle of December after which no report is available was 6 ft. on the Sikaran and Badinasar peaks and was above the average.

IV.—Kashmir.

(*a*) *Skardu.*—Snowfall occurred on the surrounding mountains on 2 days in October and 9 days in November. In December snow fell on 13 days extending to the station level on 5 days. The total of the period was below the average.

(*b*) *Dras.*—The snowfall of October was confined to the higher mountains only. In November and December it frequently extended to the station level also. The total of the period was above the normal. The accumulation of snow at the end of December was about 3 ft., being slightly below the average.

(*c*) *Srinagar.*—Light snow fell on the surrounding mountains on 2 days in October. In November snowfall also extended to the station on 2 days. In December snowfall was observed on 7 days. The total of the period was much above the average.

(*d*) *Kargil.*—There was no snow in October, while it snowed on 3 days in November and on 7 days in December. The total snowfall of the period was below the average. The accumulations of snow at the end of December were normal, being 3 ft. in depth.

(*e*) *Sonamarg.*—Snow fell occasionally in November and December. At the end of December all passes and peaks were covered with thick snow, the depth of accumulation at the ground being 3 ft., which was below the average.

(*f*) *Gurez.*—Several falls of snow were observed during the period, the total snowfall as well as the accumulations being above normal.

(*g*) *Leh.*—Light snow fell in all the three months, extending at times to the station level. There were no accumulations of snow on the northern slopes of mountains up to a height of 13,000 feet.

V.—Punjab.

(*a*) *Kulu (Kangra District).*—It snowed in November and December, the snowline being above 10,000 feet in the former month and descending down to 3,000 feet in the latter month. The total snowfall was above the average.

The accumulations of snow at the end of December are set out in the following table. They were below normal in Kulu Tahsil and above it in Saraj Tahsil.

Table.

Locality.	Depth.	Locality.	Depth.
Kulu Tahsil.	Ft.	Saraj Tahsil.	Ft.
Rohtang . . .	½	Siri Khand . . .	9
Hamta	1	Chul	4½
Chandar Khani . .	½	Maghin . . .	3
Barsai	½	Dundku . . .	2
Pujadhar . . .	1½	Tikar	1
Lohri Achhri . . .	2	Ramgarh . . .	..
Sari	½	Raghopur . . .	..
Bhubu	½	Jalori	2
Bastori	½	Sakiran . . .	3
Majhang . . .	..	Lambri . . .	4

Locality.	Depth.	Locality.	Depth.
SARAJ TAHSIL—*contd.*	Ft.	SARAJ TEHSIL—*concld.*	
Gargorason . .	4	Palach . . .	2
Shupakun . . .	2	Tirth	3
Bashleo . . .	1½	Nohnun . . .	1

(*b*) *Kilba* (*Simla District*).—Slight snowfall occurred on 2 days in October bringing the snowline to a height of 15,000 feet. In Novembeer snow fell on 6 days, the lowest limit reached being 7,500 feet with an approximate depth of 6 in. In December snow fell on 9 days and the lowest limit reached by the snowfall in this month was to a height of 5,500 feet with an approximate depth of 8 in. The total snowfall during the period was above the average.

The accumulations of snow at the end of each month are given in the following table :—

TABLE.

Pass or peak.	October	November.	December.
	Ft.	Ft.	Ft.
Rupan	3	7	12
Brua	2	5½	9
Shatul	2	5½	9
Kailash	7	10	20

The accumulations of snow at the end of December were much above the average.

VI.—UNITED PROVINCES.

Almora.—Fresh falls of snow during each of the months October, November and December are given below :—

TABLE.

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
Malla Danpur . . .	1½	2½	3½
Malla Darma . . .	..	2½	..
Biyans	4½	7½	4
Chaudans	..	..	4
Malla Johar	..	..	4½

The total snowfall during the period was below normal except in patti Biyans where it was above the average.

The accumulations of snow at the end of each month are given in the following table :—

TABLE.

Peak or pass.	October.	November.	December.
	Ft.	Ft.	Ft.
Lampia	4½	13½	12
Lipulekh	3	9	8
Kafini	1	2½	3½
Pindari	1	..	3½
Puwalidwar . . .	1	2½	3½
Nandakot	1	2½	3½
Kantila	..	2½	3½
Nuwe	..	17	11
Untadhura	..	..	7
Milamdhura . . .	..	..	7
Bagdwar	..	..	6

The accumulations were below the average.

Summary.

The cold weather period, January and February.—The winter snowfall at Meshed was much heavier than usual. It was normal in Baluchistan and somewhat above it in Afghanistan. In the North-West Frontier Province snowfall was above the average on the Takht-i-Suleman and normal elsewhere. The accumulations at the end of February were below the average. In the Murree hills the snowfall was below the average ; but elsewhere in the Punjab as well as in the United Provinces hills the amount of snowfall was above normal, being exceptionally heavy in the Simla hills. The accumulations of snowfall at the end of February were normal or in defect in the Simla-Kumaon hills. The fall on the Kamrup hills in Assam was normal and on the Sadiya Frontier Tract in defect.

The hot weather period March to May.—Information is scanty about Persia. In Kabul there was no snowfall after the 8th March, while in Baluchistan the period was entirely snowless. Snowfall was normal or in defect in the North-West Frontier Province and northern hills of the Punjab. In Kashmir and the Simla-Kumaon hills snowfall was above

the average. The accumulations of snow at the end of May were above normal in Kashmir and below it in the Punjab-Kumaon hills. Averaged over the whole western Himalayas the accumulations were probably normal.

The south-west monsoon period, June to September—June and July.—On the Hindu Kush mountain near Kabul the snowfall of June and July and the accumulations at the end of July were normal. Over the western Himalayas, as a whole, the snowfall of the season was confined to levels about 15,000 feet in height. The accumulations of snow at the end of July were above the average on the Lowarai hills and the Kurram range in the North-West Frontier Province, the hills round Dras and Sonamarg in Kashmir, the Kilba hills in the Punjab and the patti Biyans in the United Provinces. Elsewhere the accumulations were normal or in defect.

August and September.—In the hills of the North-West Frontier Province some snow fell towards the end of September. In Kashmir, however, there were several falls during the season, those occurring towards the end of August and the beginning of September being specially noteworthy. The total amount of snow on the high mountains was generally above the average Slight accumulations of snow were also visible on some of the mountains at the end of September. In the Simla-Kumaon hills the snowfall of the season was above the average on the Kilba range and in patti Biyans and below it in patti Malla Danpur; the accumulations of snow at the end of September were generally below the average.

The retreating monsoon period, October to December.—In Afghanistan and Baluchistan snowfall commenced in November, the total of the period being above the average in the latter division. In the hills of the North-West Frontier Province, October was generally snowless; but the snowfall of November and December together with the accumulations at the end of December were above the average except on the hills round Drosh where they were in defect. In Kashmir the snowfall of October was confined to the higher mountains; in November and December snow extended to lower levels, the total of the period being in defect on the hills round Skardu, Kargil and Leh, in excess round Srinagar and Gurez. The accumulations of snow at the end of December were about normal. In the Punjab hills the total snowfall of the period as well as the accumulations at the end of December were above the average. In the hills of the United Provinces the snowfall of the period was below normal except in patti Biyans where it was above the average. The accumulations of snow at the end of December were below normal.

MGIPC—S5—VIII-3-12—17-9-29—250.